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10/520,122

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EXAMINER

BANH, DAVID H

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,122	Applicant(s) VOSAHLO, JINDRICH	
	Examiner DAVID BANH	Art Unit 2854	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,10,12,14,15,25,28,29,33,36,38,40,42,47,50,68,76,78 and 81-83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/23/09</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1,3-6,10,12,14,15,25,28,29,33,36,38,40,42,47,50,68,76,78 and 81-83.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 3-6, 10, 12, 14, 15, 25, 28, 29, 33, 36, 38, 40, 42, 47, 50, 68, 76, 78 and 81-83 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-6, 12, 15, 25, 28, 29, 38, 40, 42 and 83 are rejected under 35 U.S.C. 102(b) as being anticipated by Sachs (US Patent 4,309,452).

For claim 1: Sachs teaches a method of printing an area of a substrate (column 3, lines 23-24) in a plurality of passes (column 3, lines 23-24 and lines 40-41) using radiation curable ink (column 3, lines 25-26), the method comprising depositing a first pass of ink using radiation curable ink on the area (column 3, lines 23-24), partially curing the ink deposited in the first pass such that an exposed surface of the partially cured ink is in non-solidified form (column 3, lines 30-33), depositing a second pass of

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ink using radiation curable ink on the area (column 3, lines 39-42) and fully curing the ink on the area (column 3, lines 43-46).

For claim 3: Sachs teaches the method of claim 1 wherein the partial curing step is such that an exposed surface of the partially cured ink is in substantially gel form (column 3, lines 30-33, see also claim 1, section (a) of Sachs in column 5, lines 10-15).

For claim 4: Sachs teaches the method of claim 1 wherein the exposed surface of the partially cured ink is prevented from solidifying by oxygen inhibition (see column 3, lines 40-45, a low oxygen environment is provided in the same way the low oxygen environment is provided in the present invention).

For claim 5: Sachs teaches the method of claim 1 wherein the partial curing step effects at least partial curing of the ink adjacent the substrate (column 3, lines 28-32, the ink is cured throughout a portion of its thickness but not on the surface, so the ink near the substrate is at least partially cured).

For claim 6: Sachs teaches the method of claim 1 wherein the partial curing step effects at least partial curing of the ink (see column 3, lines 28-32, as above) such that the partially cured ink is stable after a period of minutes (the ink is gelled and tacky, which gives it some stability).

For claim 12: Sachs teaches the method of claim 1 wherein the ink comprises UV curable ink (see column 3, lines 24-26).

For claim 15: Sachs teaches the method of claim 1 wherein the fully curing step comprises providing a low oxygen environment (column 3, lines 40-45).

For claim 25: Sachs teaches the method of claim 1 wherein the partially cured ink is such that at least a part of the ink can be displaced by rubbing (see column 3, lines 34-36, the surface is tacky, so it can be smeared by rubbing).

For claim 28: Sachs teaches the method of claim 1 wherein the first pass of ink is such that it is wetted by the ink of the second pass (column 3, lines 40-45, the second layer is applied to the first layer, so there is contact between the layers, so the ink of the first pass is wetted by the ink of the second pass).

For claim 29: Sachs teaches a method of printing an area of a substrate (column 3, lines 23-24) in a plurality of passes (column 3, lines 23-24 and lines 40-41) using radiation curable ink (column 3, lines 25-26), the method comprising depositing a first pass of ink on the area by using radiation curable ink (column 3, lines 23-24) and substantially immobilizing the ink of the first pass on the area in a first curing step (column 3, lines 30-33), wherein the immobilized ink is such that it is substantially wetted by ink of a subsequent pass (column 3, lines 40-45, the second pass is deposited on top of the first pass so it wets the first pass) and depositing a second pass of ink on the area by using radiation curable ink (column 3, lines 39-42), wherein ink of the second pass is applied on top of ink of the first pass (column 3, lines 40-45).

For claim 38: Sachs teaches an apparatus for use in printing an area of a substrate (column 3, lines 23-24) in a plurality of passes (column 3, lines 23-24 and lines 40-41) using radiation curable ink (column 3, lines 25-26), comprising a print head arranged to deposit a first pass of ink using radiation curable ink on the area (column 3, lines 23-24, ink is deposited, and the any structure for depositing ink is a form of print

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head), means for partially curing the ink deposited on the area wherein the means for partially curing the ink is adapted to partially cure the ink such that an exposed surface of the partially cured ink is in non-solidified form (column 3, lines 30-33), a printhead arranged to deposit a second pass of ink on the area (column 3, lines 39-42) and means for substantially fully curing the ink on the area (column 3, lines 43-46).

For claim 40: Sachs teaches the apparatus of claim 38 wherein the partial curing means is adapted to partially cure the ink such that an exposed surface of the partially cured ink is in substantially gel form (column 3, lines 30-33, see also claim 1, section (a) of Sachs in column 5, lines 10-15).

For claim 42: Sachs teaches the apparatus of claim 1 wherein the partial curing means effects at least partial curing of the ink adjacent the substrate (column 3, lines 28-32, the ink is cured throughout a portion of its thickness but not on the surface, so the ink near the substrate is at least partially cured).

For claim 83: Sachs teaches the method of claim 1 wherein the ink of the second pass is applied on top of the ink of the first pass (column 3, lines 40-45).

4. Claims 38, 47, 68 and 76 are rejected under 35 U.S.C. 102(e) as being anticipated by Cleary et al. (US Patent 6,457,823).

For claim 38: Cleary et al. teaches an apparatus for an inkjet device comprising a print head **28-1** for depositing a first pass of ink using radiation curable ink on the area (see Fig. 2A), means **24-1**, **24-2** for partially curing the ink deposited on the area wherein the means are adapted to partially cure the ink such that an exposed surface of the ink is in non-solidified form (see column 1, lines 50-52, the ink is merely set), a print

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head **28-2** arranged for depositing a second pass of ink, and means **200** for fully curing the ink on the area (see Fig. 11).

For claim 47: Cleary et al. teaches the apparatus of claim 38 wherein the partial and full curing means are separate (see Figs. 2 and Figs. 11, **24-1**, **24-2** and **200** are separate).

For claim 68: Cleary et al. teaches the apparatus of claim 38 wherein a light emitted diode is adapted to emit radiation toward the ink (column 2, lines 1-10).

For claim 76: Cleary et al. teaches an ink jet device (see Figs. 1 and 2), including an apparatus according to Claim 38, as taught in the rejection for claim 38, for printing on an area of a substrate using ink, the device comprising a printer carriage **18a** (see Figs. 2A, 2B) having one or more print heads **28** for depositing the first and second passes of ink (column 4, lines 30-40 teach multiple layers of ink each deposited one at a time) and a radiation source **24-1** for partially curing ink (column 1, lines 50-52) emitted by the one or more print heads **28** and a radiation source **200** for substantially fully curing the ink wherein the radiation source **24-1** for partially curing the ink is arranged to move with the one or more print heads (see Figs. 2A, 2B, see also column 5, lines 5-10, the radiation sources are on the carriage with the print head), and the radiation source **200** for substantially fully curing the ink is arranged such that the one or more print heads **28-1** can move relative to such radiation source **200** (see Fig. 11, the print heads are movable and the radiation source **200** is seen as completely separate).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10, 33 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachs (US Patent 4,309,452) in view of Kamen (WO 99/19074)

For claims 10 and 47: Sachs teaches all of the limitations of claim 10 and 47 except that the step of partially curing the ink is effected by a first device and the step of fully curing the ink is effected by a second device wherein the location of the first device is separate from the location of the second device. However, Kamen teaches a printing apparatus **110** (see Fig. 1) wherein first and second layers of ink **112** are printed on a substrate **114** using first and second stations **102**, **104** comprising first and second print heads **108** and cured with first and second curing devices **108**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange first and second printing stations comprising first and second separate curing devices as taught by Kamen for effecting partial and full cures to first and second layers of curable material as taught by Sachs for the purpose of being able produce a stream of printed products more quickly in an assembly line fashion.

For claim 33: Sachs teaches all of the limitations of claim 1 except emitting the ink using a printer carriage having one or more print heads, curing the ink using two separate radiation sources, wherein the first radiation source is arranged to move with

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one of the print heads and the second radiation source is arranged such that the print head can move relative to the radiation source. However, Kamen teaches emitting the ink using a printer carriage having at least one print head (see Fig. 2, **132**, **136**, the squeegee **136** can be considered the movable print head), partially curing the emitted ink using a first radiation source (see Fig. 1, **108**, the first **108** at least partially cures the ink, see column 3, lines 9-11), curing the ink using a second radiation source (see Fig. 1, the second radiation source **108**), wherein the first radiation source is arranged to move with one or more print heads (see Fig. 1, the first radiation source is arranged to move) and the second source is arranged such that the print head can move relative to the radiation source (see Figs. 1 and 2, the print head can be moved relative to the radiation source as it is independently moveable and the radiation source is also independently movable). It would have been obvious to one of ordinary skill in the art at the time the invention was made to emit ink using a print head for the purpose of having more precise positioning of the ink. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use two radiation sources, one for drying each coat of ink, capable of movement with and relative to the print head as taught by Kamen to dry the substrate to allow for sequential and targeted drying to increase the speed of production.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sachs (US Patent 4,309,452) in view of Bettoli (US Patent 4,180,615).

For claim 14: Sachs teaches all of the limitations of claim 14 except that the wavelength of radiation used in the partial curing is greater than about 370nm,

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preferably approximately between 380nm and 420nm and more preferably between 385nm and 400nm. However, Bettoli teaches that the wavelength of the radiation used in the partial curing is between 2500 Angstrom and 4000 Angstrom, which is 250nm to 400nm. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use radiation with a wavelength of between 250nm and 400nm to provide the appropriate dose of radiation to the substrate and coat without over baking the coat. The range of 250nm to 400nm overlaps with the range of 385nm and 400nm and thus provides a prima facie case of obviousness, see MPEP §2144.05 Section I. Additionally, the Bettoli reference is incorporated within the disclosure of the Sachs reference (see column 3, lines 55-60).

8. Claims 36 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachs (US Patent 4,309,452) in view of Young (US PG Pub 2003/0081096).

For claims 36 and 68: Sachs teaches all of the limitations of claim 36 and 68 except that the radiation is emitted by a light emitting diode. However, Young teaches device that emits ultraviolet light that can use either an ultraviolet lamp or a light emitting diode (see paragraph 53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a light emitting diode as taught by Young to produce the ultraviolet light to partially and fully cure the ink as taught by Sachs for the purpose of reducing the amount of energy used.

9. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sachs (US Patent 4,309,452) in view of Matthews et al. (US Patent 4,313,969).

For claim 50: Sachs teaches all of the limitations of claim 50 except means for varying the radiation output of the radiation source so to vary the level of gloss on the printed ink on the area. However, Matthews et al. teaches a varying the radiation output of a radiation source **5** to control the gloss of cured ink (column 3, lines 40-50, teaches the concept, and column 4, lines 44-46 teaches a control panel **25**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a means for controlling the radiation to control the gloss of the coat of produced products for the purpose of producing a more aesthetically pleasing coated product.

10. Claim 78 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary et al. (US Patent 6,457,823) in view off Martin (US Patent 4,072,099).

For claim 78: Cleary teaches the ink jet device of claim 76 and further teaches a beam **16** movable with respect to an area of a substrate (see Fig. 11, the substrate moves, so the beam is moved in that in changes position with respect to the substrate), and a printer carriage **18a** adapted to move along the beam (see column 1, lines 1-20, the carriage with the print head traverses the substrate so it moves along the beam **16**) and with the beam (see Fig. 11, the carriage and the beam are attached so they move together). Cleary et al. does not teach that the radiation source for fully curing ink **200** is relatively movable with respect to the beam. However, Martin teaches making an ultraviolet radiation source vertically movable (column 3, lines 15-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the radiation source for fully curing the ink as taught by Cleary et al. movable

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vertically as taught by Martin for the purpose of changing the intensity of the radiation on the substrate. This would make the radiation source for fully curing ink relative movable with respect to the separate beam.

11. Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sachs (US Patent 4,309,452) in view of Troue (US Patent 4,485,123).

For claim 81: Sachs teaches all of the limitations of claim 81 except that the partial curing step includes a step of varying the level of cure depending on the rate of printing. However, Troue teaches a method of producing a coated product with first a partial cure of the coat and then a subsequent full cure of the coat, comprising varying the level of partial cure depending on the rate of printing (see column 16, Table II, the various examples show a fixed number of lamps with different speeds, which would vary the amount of cure with the speed) to change the appearance of the cured product. It would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the level of cure depending on the printing rate as taught by Troue in the method of Sachs for the purpose of controlling the appearance of the final product.

12. Claim 82 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sachs (US Patent 4,309,452) and Troue (US Patent 4,485,123) as applied to claim 81 above and in further view of Matthews et al. (US Patent 4,313,969).

For claim 82: The combination of Sachs and Troue teaches The method of claim 81 except that the dose of curing radiation applied to a region of ink is varied so to vary the level of gloss of ink on the area. However, Matthews et al. teaches a varying the radiation output of a radiation source 5 to control the gloss of cured ink (column 3, lines

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40-50, teaches the concept, and column 4, lines 44-46 teaches a control panel **25**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a means for controlling the radiation to control the gloss of the coat of produced products for the purpose of producing a more aesthetically pleasing coated product.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID BANH whose telephone number is (571)270-3851. The examiner can normally be reached on M-Th 9:30AM-8PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DHB

/Judy Nguyen/
Supervisory Patent Examiner, Art Unit 2854